

Listing of Claims:

1 1. (original) A tubing injector for injecting coiled tubing into a subsea flowline,
2 comprising: a traction device including opposed grippers laterally moveable with
3 respect to the coiled tubing to move a respective chain link member of an endless loop
4 chain into gripping engagement with the coiled tubing; a drive motor for powering the
5 endless loop chain; a plurality of roller bearings each acting between a respective
6 chain link member and a gripper, each roller bearing including a shaft and seals
7 subjected to subsea conditions; and a pressure compensating device for subjecting
8 fluid in a fluid passageway in the roller bearing to a fluid pressure functionally related
9 to subsea pressure, such that a controlled pressure differential exists across the seals
10 which seal the fluid from the subsea conditions.

1 2. (original) A tubing injector as defined in claim 1, wherein the pressure
2 compensating device includes a piston moveable within a bore in the shaft of the roller
3 bearing, with one face of the piston exposed to lubricant and an opposing face of the
4 piston exposed to subsea conditions.

1 3. (original) A tubing injector as defined in claim 2, further comprising: a seal
2 for maintaining substantially sealed engagement between the piston and the shaft to
3 fluidly isolate the fluid from the subsea conditions.

1 4. (original) A tubing injector as defined in claim 2, further comprising: a
2 biasing member within the shaft for exerting a selected bias on the piston.

1 5. (original) A tubing injector as defined in claim 1, wherein the pressure
2 compensating device includes a diaphragm positioned within the shaft for sealing fluid
3 from subsea conditions, such that movement of the diaphragm provides pressure
4 compensation to the fluid.

1 6. (original) A tubing injector as defined in claim 1, further comprising: a fluid
2 inlet port in the shaft for selectively inputting fluid into the fluid passageway in the
3 roller bearing assembly; and a check valve from preventing the fluid from passing
4 outward from the fluid passageway.

1 7. (original) A tubing injector for injecting coiled tubing into a subsea flowline,
2 comprising: a traction device including opposed grippers laterally moveable with
3 respect to the coiled tubing to move a respective chain link member of an endless loop

4 chain into gripping engagement with the coiled tubing; a drive motor for powering the
5 endless loop chain; a plurality of roller bearings each acting between a respective
6 chain link member and a gripper, each roller bearing including a shaft and seals
7 subjected to subsea conditions; a fluid inlet port in the shaft for inputting fluid into a
8 fluid passageway in the roller bearing assembly; and a pressure compensating device
9 for subjecting fluid in the fluid passageway in the roller bearing to a fluid pressure
10 functionally related to subsea pressure, such that a controlled pressure differential
11 exists across the seals which seal the fluid from the subsea conditions.

1 8. (original) A tubing injector as defined in claim 7, wherein the pressure
2 compensating device includes a piston moveable within a bore in the shaft of the roller
3 bearing, with one face of the piston exposed to lubricant and an opposing face of the
4 piston exposed to subsea conditions.

1 9. (original) A tubing injector as defined in claim 8, further comprising: a seal
2 for maintaining substantially sealed engagement between the piston and the shaft to
3 fluidly isolate the fluid from the subsea conditions.

1 10. (original) A tubing injector as defined in claim 8, further comprising: a
2 biasing member within the shaft for exerting a selected bias on the piston.

1 11. (original) A tubing injector as defined in claim 8, wherein the pressure
2 compensating device includes a diaphragm positioned within the shaft for sealing fluid
3 from subsea conditions, such that movement of the diaphragm provides pressure
4 compensation to the fluid.

1 12. (original) A tubing injector as defined in claim 1, further comprising: a
2 check valve from preventing the fluid from passing outward from the fluid
3 passageway.

1 13. (original) A tubing injector as defined in claim 1, wherein the tubing injector
2 injects coiled tubing into a subsea well.

1 14. (original) A method of injecting coiled tubing into a subsea flowline,
2 comprising: providing a traction device including opposed grippers laterally moveable
3 with respect to the coiled tubing to move a respective chain link member of an endless
4 loop chain into gripping engagement with the coiled tubing while powering the endless
5 loop chain; providing a plurality of roller bearings each acting between a respective

6 chain link member and a gripper, each roller bearing including a shaft and seals
7 subjected to subsea conditions; and automatically pressure compensating fluid in a
8 fluid passageway in the roller bearing to a fluid pressure functionally related to subsea
9 pressure, such that a controlled pressure differential exists across the seals which seal
10 the fluid from the subsea conditions.

1 15. (original) A method injector as defined in claim 14, further comprising:
2 providing a piston moveable within a bore in the shaft of the roller bearing, with one
3 face of the piston exposed to lubricant and an opposing face of the piston exposed
4 to subsea conditions.

1 16. (original) A method as defined in claim 15, further comprising: maintaining
2 substantially sealed engagement between the piston and the shaft to fluidly isolate the
3 fluid from the subsea conditions.

1 17. (original) A method as defined in claim 15, further comprising: exerting a
2 selected bias on the piston.

1 18. (original) A method as defined in claim 14, further comprising: providing
2 a diaphragm positioned within the shaft for sealing fluid from subsea conditions, such
3 that movement of the diaphragm provides pressure compensation to the fluid.

1 19. (original) A method as defined in claim 14, further comprising: selectively
2 inputting fluid into the fluid passageway in the roller bearing assembly; and preventing
3 the fluid from passing outward from the fluid passageway with a check valve.

1 20. (original) A method as defined in claim 14, wherein the coiled tubing is
2 injected into a subsea well.